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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,365	11/19/2003	Eric Bass	2069.012700/LE0042	6696
23720	7590	07/17/2006	EXAMINER	
WILLIAMS, MORGAN & AMERSON			SINGH, RAMNANDAN P	
10333 RICHMOND, SUITE 1100			ART UNIT	
HOUSTON, TX 77042			PAPER NUMBER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/717,365	Applicant(s) BASS, ERIC	
	Examiner Ramnandan Singh	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

1. Claim 7 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 6. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Specification

2. The abstract of the disclosure is objected to because it states "the difference is difference is outside" line 11. Delete the term "difference is". Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Sues et al [US 4,910,768].

Regarding claim 1, Sues et al teach a method , comprising:

providing a differential signal [Fig. 2; col. 4, line 64 to col. 5, line 2]; and

performing a calibration of a gain (i.e. measurement of an amplitude of the differential signal with respect to an amplitude reference) of at least a portion of the differential signal to affect the longitudinal balance associated with the differential signal [Fig. 2; col. 2, lines 32-52],

performing the calibration comprises:

receiving a first portion (i.e. TIP) of the differential signal and determining a gain associated with the first portion (i.e. TIP) [Fig. 2; col. 3, lines 61-67];

receiving a second portion (i.e. RING) of the differential signal and determining a gain associated with the second portion (i.e. RING) [Fig. 2; col. 3, lines 61-67];

determining a difference between the respective gains of the first (i.e. TIP) and second (i.e. RING) portions to determine whether the difference is outside a predetermined range of tolerance (i.e. not perfectly balanced) [Fig. 2; col. 4, lines 3-55; col. 4, line 66 to col. 5, line 2; col. 6, lines 3-6]; and

modifying (i.e. adjusting) at least one of the gain of the first portion (i.e. TIP) and the gain of the second portion (i.e. RING) based upon a determination that the difference is outside the predetermined range of tolerance (i.e. not perfectly balanced) [Figs. 1-2; col. 4, line 28 to col. 5, line 2; Fig. 3; col. 5, lines 21-46; col. 6, lines 3-6].

Claim 9 is essentially similar to claim 1 and is rejected for the reasons stated above.

Claim 10 is essentially similar to claim 1 except for a first and second amplifier. Sue et al teach an apparatus comprising : a first amplifier (40) to receive a first portion of a differential signal (RING) and a second amplifier (39) to receive a second portion of the differential signal to generate a differential output signal using a summing circuit (12) [Figs. 2-3].

Regarding claim 2, Sue et al further teach the method, wherein receiving the signal comprises receiving the telecommunication signal [Fig. 2; col. 5, lines 10-20].

Claim 11 is essentially similar to claim 2 and is rejected for the reasons stated above.

Regarding claim 3, Sue et al further teach the method, wherein receiving the telecommunications signal comprises receiving a TIP and RING signal [Fig. 2; col. 5, lines 10-20].

Claim 12 is essentially similar to claim 3 and is rejected for the reasons stated above.

Regarding claim 4, the limitations are shown above.

Regarding claim 5, Sue et al further teach the method comprising modifying the signal associated with the TIP signal forward and the gain of a signal associated with the RING signal forward [Fig. 2 ; col. 4, lines 28-65].

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sues et al [US 4,910,768] in view of Lynch [US 6,724,880 B1].

Regarding claim 21, Sue et al teach a system, as shown in Fig. 2, comprising:
a subscriber line [Fig. 2; TIP conductor 31 and RING conductor 32];
providing a differential signal [Fig. 2; col. 4, line 64 to col. 5, line 2]; and
performing a calibration of a gain (i.e. measurement of an amplitude of the differential signal with respect to an amplitude reference) of at least a portion of the differential signal to affect the longitudinal balance associated with the differential signal [Fig. 2; col. 2, lines 32-52],

performing the calibration comprises:

receiving a first portion (i.e. TIP) of the differential signal and determining a gain associated with the first portion (i.e. TIP) [Fig. 2; col. 3, lines 61-67];

receiving a second portion (i.e. RING) of the differential signal and determining a gain associated with the second portion (i.e. RING) [Fig. 2; col. 3, lines 61-67];

determining a difference between the respective gains of the first (i.e. TIP) and second (i.e. RING) portions to determine whether the difference is outside a predetermined range of tolerance (i.e. not perfectly balanced) [Fig. 2; col. 4, lines 3-55; col. 4, line 66 to col. 5, line 2; col. 6, lines 3-6]; and

modifying (i.e. adjusting) at least one of the gain of the first portion (i.e. TIP) and the gain of the second portion (i.e. RING) based upon a determination that the difference is outside the predetermined range of tolerance (i.e. not perfectly balanced) [Figs. 1-2; col. 4, line 28 to col. 5, line 2; Fig. 3; col. 5, lines 21-46; col. 6, lines 3-6].

Sue et al do not teach expressly using a line card coupling the subscriber line.

Lynch teaches using a line card (140A) coupling the subscriber line, wherein the line card is adapted to provide a differential signal [Figs. 3-4; col. 4, line 57 to col. 5, line 10; col. 5, line 54 to col. 6, line 8; col. 8, lines 43-56].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Lynch with Sue et al so that a single line

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card may interface with a substantial number of telecommunications lines, in high density systems [Lynch; col. 2, lines 63-66].

Regarding claim 22, Sue et al further teach an apparatus comprising : a first amplifier (40) to receive a first portion of a differential signal (RING) and a second amplifier (39) to receive a second portion of the differential signal to generate a differential output signal using a summing circuit (12) [Figs. 2-3]. The other limitations are shown above.

Regarding claim 23, Sue et al further teach the method, wherein receiving the signal comprises receiving the telecommunication signal [Fig. 2; col. 5, lines 10-20].

Regarding claim 24, Sue et al further teach the method, wherein receiving the telecommunications signal comprises receiving a TIP and RING signal [Fig. 2; col. 5, lines 10-20].

7. Claims 6-8, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sue et al as applied to claims 1, 10 above, and further in view of Nilson [US 5,436,953].

Regarding claims 6-7, although Sue et al teach using apparatus coupled to the

TIP and RING conductors to detect differences in phase and amplitude between the first and second signals [col. 2, lines 40-43], they do not teach expressly applying a test load.

Nilson teaches applying a test load to an output associated with the first portion (i.e. RING conductor) to determine the difference between the respective gains of the first portion (i.e. RING) and second (i.e. TIP) portions [Figs. 1-3; col. 3, line 33 to col. 5, line 17; col. 7, lines 36-54].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Nilson with Sue et al in order to generate a set of longitudinal balance measurements to provide high quality testing without the need for human intervention at the testhead location [Nilson; col. 7, lines 30-34].

Regarding claim 8, Nilson further teaches the method, wherein applying the test load comprises applying a resistive load [Fig. 1; col. 4, lines 3-15].

Regarding claim 15, Nilson further teaches the apparatus comprising a test load shown in Fig. 1, coupled with an output terminal of a switch (10) [Fig. 1].

Regarding claims 16-17, the combination of Sue et al and Nilson teaches the limitations [Sue et al; Fig. 2-3; Nilson; Figs. 1, 3].

8. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sue et al as applied to claim 10 above, and further in view of Zobel et al [US 4,431,874].

Regarding claim 13, although Sue et al teach a third amplifier (67) to provide the gain associated with the first portion (TIP) of the differential output signal; and a fourth amplifier (63) to provide the gain associated with the second portion (RING) of the differential output signal [Fig. 5; col. 6, lines 7-46]; they do not teach expressly a first and second current source.

Zobel et al teach a third amplifier (22) to provide the gain associated with the first portion (TIP) of the differential output signal; and a fourth amplifier (44) to provide the gain associated with the second portion (RING) of the differential output signal using a first (158) and second (160) current source, as shown in Fig. 3, for longitudinally balancing the telephone lines [Fig. 3; col. 6, lines 47-68].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Zobel et al with Sue et al in order to provide sufficient current to drive a load [Zobel et al; col. 3, lines 42-61].

Regarding claim 14, Zobel et al teach the apparatus, wherein the third amplifier, fourth amplifier, first current source, second current source, and the calibration unit are housed in a subscriber line interface circuit (SLIC) (100) [col. 5, lines 16-20; col. 3, lines 42-61].

9. Claims 18-20 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sue et al and Nilson as applied to claim 15 above, and further in view of Apfel et al ["Signal Processing Chips Enrich Telephone Line-Card Architecture"; Electronics; May 5, 1982; pp. 113-118].

Regarding claim 18, the combination of Sue et al and Nilson does not teach expressly a SLAC.

Apfel et al teach teaching a SLAC housing the amplifiers and the switch [Figs. 1-3; pp. 113-117].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Apfel et al with Sue et al and Nilson in order to integrate various components into a single chip [Apfel et al; p. 119].

Regarding claim 19, Apfel et al further teach the apparatus, wherein the SLAC and SLIC are housed on a single integrated chip [Apfel et al; Fig. 4; p. 118].

Regarding claim 20, Apfel et al further teach the apparatus, wherein the SLIC is housed on a first integrated circuit chip and the SLAC is housed on a second integrated circuit chip [Apfer et al; Fig. 1; p. 113].

10. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sue et al and Lynch as applied to claim 22 above, and further in view of Zobel et al [US 4,431,874].

Regarding claim 25, although Sue et al teach a third amplifier (67) to provide the gain associated with the first portion (TIP) of the differential output signal; and a fourth amplifier (63) to provide the gain associated with the second portion (RING) of the differential output signal [Fig. 5; col. 6, lines 7-46]; they do not teach expressly a first and second current source.

Zobel et al teach a third amplifier (22) to provide the gain associated with the first portion (TIP) of the differential output signal; and a fourth amplifier (44) to provide the gain associated with the second portion (RING) of the differential output signal using a first (158) and second (160) current source, as shown in Fig. 3, for longitudinally balancing the telephone lines [Fig. 3; col. 6, lines 47-68].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Zobel et al with Sue et al and Lynch in order to provide sufficient current to drive a load [Zobel et al; col. 3, lines 42-61].

Regarding claim 26, Zobel et al teach the apparatus, wherein the third amplifier, fourth amplifier, first current source, second current source, and the calibration unit are housed in a subscriber line interface circuit (SLIC) (100) [col. 5, lines 16-20; col. 3, lines 42-61].

11. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sue et al, Lynch and Zobel et al as applied to claim 26 above, and further in view of Nilson [US 5,436,953].

Regarding claim 27, Sue et al teach do not teach expressly applying a test load.

Nilson teaches the apparatus comprising a test load shown in Fig. 1, coupled with an output terminal of a switch (10) [Figs. 1-3; col. 3, line 33 to col. 5, line 17; col. 7, lines 36-54].].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Nilson with Sue et al, Lynch and Zobel et al in order to generate a set of longitudinal balance measurements to provide high quality

testing without the need for human intervention at the testhead location [Nilson; col. 7, lines 30-34].

Regarding claims 28-29, the combination of Sue et al and Nilson teaches the limitations [Sue et al; Fig. 2-3; Nilson; Figs. 1, 3].

12. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sue et al, Lynch, Zobel et al and Nilson as applied to claim 27 above, and further in view of Apfel et al ["Signal Processing Chips Enrich Telephone Line-Card Architecture"; Electronics; May 5, 1982; pp. 113-118].

Regarding claim 30, the combination of Sue et al, Lynch, Nilson and Zobel et al does not teach expressly a SLAC.

Apfel et al teach teaching a SLAC housing the amplifiers and the switch [Figs. 1-3; pp. 113-117].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Apfel et al with Sue et al, Nilson, Lynch and Zobel et al in order to integrate various components into a single chip [Apfel et al; p. 119].

Regarding claim 31, Apfel et al further teach the apparatus, wherein the SLAC and SLIC are housed within a line-card [Apfel et al; Fig. 4; p. 118].

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Grandstaff, O. D. ; "Longitudinal Balance Measurement of Central Office Equipment", IEEE Trans. on Communications, Vol. 20, No. 3, June 1972; pp. 382-391; and

(ii) IEEE Standard: "Test Procedures for Measuring Longitudinal Balance of telephone Equipment Operating in the Voice Band"; ANS/IEEE Std 455-1985 [Whole document].

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh
Examiner
Art Unit 2614

A handwritten signature in black ink, appearing to read 'RNG', is positioned to the right of the printed name and title.